Combined Heat and Power and Cap & Trade

Michael Colvin
Policy and Planning Division
California Public Utilities Commission

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CHP Plays Two Roles

• In the context of AB 32, Combined Heat and Power (CHP) is both:
  — An emitter of GHG
  — An emissions reduction strategy

• Cap & Trade will impact both
Outline

• How will Cap & Trade and CHP interact
  – As an emitter
  – As an emissions reduction strategy

• Policy Updates
What is a CHP Unit

CHP Unit

<table>
<thead>
<tr>
<th>On-Site</th>
<th>Delivered to Grid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel-In</td>
<td>Electric Out</td>
</tr>
<tr>
<td></td>
<td>Thermal Out</td>
</tr>
</tbody>
</table>
Cap & Trade and CHP

• As an emitter, CHP has both an electric and a thermal component
• Cap & Trade will interact with both
  – Certain design choices of Cap & Trade could create a disincentive – we need to make the right choices
• As an emissions reduction strategy
• D08-10-037
Statewide GHG Emissions Decrease but On-site Responsibility Increases

- **Illustrative Values Only**

![Chart showing net GHG reductions between Boiler + CCGT and CHP systems.](chart.png)
Avoiding a Disincentive…

- Previous slide shows potential for Cap & Trade disincentive for CHP
- Decision recommends a consistent approach in allocation methodology in program design
- Allocation and design consistently compared to its separate parts
- Let me show you…
Allocation to CHP as an Industrial Point Source

- What would the facility have done for heat “if not” for the CHP?
- Amount of heat required by facility is the same
- Since CHP is more efficient, it will require either the same or fewer allowances compared to a standard boiler + separate power
- Allowance allocation should be the same for thermal either way
- Bottoming-cycle CHP with no supplemental firing is “thermal only”
Allocation to CHP as a Deliverer

- Electricity delivered to the grid should be treated like *any other deliverer*
- Allowance allocation to CHP should be like any other deliverer
- GHG cost should be incorporated into the price & contract
In its capacity as an on-site provider, the CHP unit functions like a retail provider to the host site.

Allowances allocation to CHP should be treated like any other retail provider.

Any revenue recycling should also flow to the facility like other retail providers.
Consistent allocation to each of the outputs is one strategy to prevent a potential disincentive to CHP.

Question: is there an alternative (and superior) way to prevent a disincentive for CHP in the Cap & Trade rules?
Reaching the Target

- Scoping Plan states 4,000 MW of new CHP to get 6.7 MMT of reductions statewide
- The CPUC’s approach is to look at improving efficiency of existing facilities and to bring on new to reach emissions reduction target for IOUs
Reaching the Target
Baseline of GHG Emissions Already Avoided From the Existing CHP Fleet

+ Addition of new CHP facilities
  (with GHG benefits compared to a benchmark)
  + Repowering or improvement of existing facilities
    (to get additional GHG benefits compared to baseline)
    + Removing existing inefficient facilities
      (are GHG adding compared to a benchmark)
      - Losing existing efficient facilities
        (makes the target larger)

IOU Share of CHP’s Scoping Plan Target
What Would Happen “If Not for” CHP?

- Benchmark is a combination of a heat rate AND a standard boiler efficiency
- The difference between a benchmark and CHP is the GHG reduction.
- The “cap” would induce the benchmark to be more efficient

Illustrative Values Only
How Cap & Trade Could Induce Greater Efficiency

- Allowances would put a price on carbon for combustion of fossil fuels
  - Some potential operational improvements as cap tightens
  - Price of allowances send signal to repower existing fleet based on heat rate and boiler efficiency
  - Additional reductions from new CHP vs. existing fleet
New Policy Framework for CHP

• Barriers exist for increased CHP penetration
• Feed-in Tariff will be a part of the new framework
• New rulemaking (OIR) to coordinate policy on CHP issues
  – Accomplish share of Scoping Plan target and other policy drivers
  – Timeframe: Framework development in 2009-10; Implementation in 2010
Feed-in Tariff for CHP

- A CHP facility up to 20 MW nameplate that is new / repowered
- Goal is to promote a thermal match to maximize use of waste heat
  - FiT allows the facility to sell excess electricity generated
  - GHG reductions from program will count towards Scoping Plan target
- Two contracts under development
  - One for “small” facilities
  - One for “medium” size facilities
- Established by AB 1613 and modified by AB 2791 (R08-06-024)
Details on Feed-in Tariff

- Initial Staff Proposal released and workshop held in February
- Additional negotiations on contract occurred in Spring
- Final Staff Proposal released in July 2009
  - Considers contracts, pricing proposals, other program design elements
- Collaborating with CEC on efficiency matters and other terms & conditions
- Tariff targeted completion by end of calendar year 2009
- Phase II – develop “pay as you save” pilot program
How the Pieces Fit Together

<table>
<thead>
<tr>
<th>New / Repowered</th>
<th>Small (&lt; 20 MW)</th>
<th>Large (&gt; 20MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed-in Tariff</td>
<td>CHP OIR</td>
<td>CHP OIR</td>
</tr>
<tr>
<td>Existing</td>
<td>CHP OIR</td>
<td>CHP OIR</td>
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These program options will coordinate with each other to reach GHG and policy objectives.
Thank you!
For Additional Information:

www.cpuc.ca.gov

mc3@cpuc.ca.gov
(415) 355-5484